

~~METHOD FOR STABILIZING A PILE FABRIC SUCH AS A PILE CARPET AND  
METHOD OF MAKING SAME WITH A REINFORCING BACKING AND A SHEET  
CLOTH PRODUCED BY SAID METHOD~~

BACKGROUND OF THE INVENTION

5 Known from EP-A-1 081 263 (US 6,594,874) is a method  
for continuous stabilization of pile carpeting, tufted carpeting,  
plush carpeting and the like, in any case of web-like goods with  
a visible side whose structure and quality must not be modified  
and a backing support layer in which the pile-forming yarns are  
10 incorporated and must be anchored [[there]] since the pile yarns  
have merely been unstably incorporated, e.g. tufted into the  
support layer made, for example, of a spun-bonded nonwoven, a  
woven fabric or knitted fabric, ~~in any case~~ for anchoring the  
pile yarns held only loosely in the support layer by means of  
15 hydrodynamic water needle-punching into the support layer.

This method is of particular importance for the  
recyclability of a carpet. In the future, the conventionally  
used latex foam backing will no longer be necessary for  
stabilizing the pile fibers.

20 Before this development it was known to spread the  
backing of a carpet, the back of the support layer with the pile  
fibers affixed therein, with a hot-melt powder (EP-A-0 005 050).  
However, this method was not successful since mixing of the  
powder with the support layer could not be sufficiently produced.  
25 The same applies if a fusible fiber (DE-A-195 06 845) or a

fusible film (DE-A-43 41 168 and US equivalent 5,660,911) is applied instead of a powder. Intensive joining of the backing fibers to the support layer could not be achieved by these methods. No pressing process was of assistance here merely because the pile fibers cannot be exposed to too-high pressure.

It was further known from DE-A-42 44 173 (US 5,993,933) [[2]] to join the textile secondary backing, [[say]] the nonwoven, to the support layer via an intermediate nonwoven. This intermediate nonwoven should at least partially consist of thermoplastic fibers which should then produce a better bonding of the pile fibers in the support layer as a result of melting. However, the disadvantage specified above still applies. A further development is disclosed in DE-A-100 56 180 where [[by]] the secondary backing together with the intermediate layer should be bonded to the support layer by means of hydrodynamic needle punching.

None of these methods yielded the desired result merely because no sufficient mixing of the components of the bonding layer such as the intermediate layer with, for example, the tufted backing components of the pile fibers and the fibers of the support layer could be achieved.

#### OBJECT OF THE INVENTION

Starting from the method according to EP-A-1 081 263 (US 6,594,874), it is the object of the invention to achieve a further improvement in the incorporation of the pile fibers in the support layer by a supplementary method.

SUMMARY OF THE INVENTION

This object is ~~solved~~ attained by a method for continuous stabilization of pile carpeting, tufted carpeting or plush carpeting, in any case of web-like goods with a visible side whose structure and quality must not be modified and a backing support layer in which the pile-forming yarns are incorporated and are anchored ~~[[there]]~~ by means of hydrodynamic water needling, ~~wherein~~ A hot melt powder, short-staple fusible fibers or a hot melt film ~~[[are]]~~ is applied as an intermediate layer to the back of the support layer provided with pile fibers, a nonwoven is placed thereover and the back of the support layer is then subjected twice to hydrodynamic needle-punching, once for intensive bonding of the intermediate layer to the backing fibers of the pile and the support layer and ~~secondly~~ again for bonding the nonwoven to the support layer to produce the carpet backing, and then the carpet is subjected to heat treatment to melt the powder, the fusible fibers or the film.

It is especially advantageous if, after the first hydrodynamic needle-punching the carpet is heat-treated to melt the intermediate layer and subjected to further hydrodynamic needling after application of the nonwoven.

The method according to the invention produces web goods consisting of a support layer into which pile-forming yarns are inserted and anchored ~~therein~~ by means of hydrodynamic water needle-punching, ~~wherein~~ An intermediate layer of molten powder, molten chemical fibers or a molten film is provided on

the back of the support layer provided with pile fibers, and a nonwoven is placed thereover and the backing of the support layer ~~has been~~ is subjected twice to hydrodynamic needle-punching, once for intensive bonding of the intermediate layer to the backing  
5 fibers of the pile and the support layer and ~~secondly~~ again for bonding the nonwoven to the support layer to produce the carpet backing, and then the carpet ~~has been~~ is treated with heat to melt the powder, the fusible fibers or the film.